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Opportunity Title: Studying Biosphere Drivers, Change, and Impacts in Terrestrial and Coastal Ecosystems Using Remote Sensing Data and Modeling
Opportunity Reference Code: 0331-NPP-MAR26-GSFC-EarthSci

Organization National Aeronautics and Space Administration (NASA)

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How to Apply All applications must be submitted in Zintellect

Please visit the NASA Postdoctoral Program website for application instructions and requirements: How to Apply | NASA Postdoctoral Program (orau.org)

A complete application to the NASA Postdoctoral Program includes:

1. Research proposal
2. Three letters of recommendation
3. Official doctoral transcript documents

Application Deadline 4/2/2026 6:00:59 PM Eastern Time Zone

Description **About the NASA Postdoctoral Program**

The NASA Postdoctoral Program (NPP) offers unique research opportunities to highly-talented scientists to engage in ongoing NASA research projects at a NASA Center, NASA Headquarters, or at a NASA-affiliated research institute. These one- to three-year fellowships are competitive and are designed to advance NASA's missions in space science, Earth science, aeronautics, space operations, exploration systems, and astrobiology.

Description:

Biospheric modeling --- This postdoctoral position focuses on advancing our understanding of Earth's biosphere and complex feedbacks to weather and climate through the innovative integration of cutting-edge remote sensing observations and process-based models to study terrestrial and coastal ecosystems that are under increasing threat from a range of factors including wildfire and other disturbances, changing water resources, land-use changes and new pressures, and environmental pressures. Current challenges in monitoring, characterizing and predicting ecosystems include significant gaps in our ability to capture fine-scale heterogeneity and underlying drivers of change that create emergent ecosystem responses that influence resilience of ecosystems to current and future threats. Ongoing threats to natural resources include managed landscapes such as agricultural systems and working forests, where irrigation practices create complex spatial and temporal patterns that are difficult to detect and quantify with existing satellite observations alone. At the same time, coastal ecosystems face compounding stressors from sea level rise, saltwater intrusion, erosion, hydrological changes and runoff, yet process models often lack the spatially explicit, high-frequency data needed to accurately simulate these rapidly changing dynamics and their cascading effects on vegetation health, carbon cycling, and ecosystem services. By

synergistically combining passive/active multi-scale remote sensing data with mechanistic biogeochemical and hydrological models, this research aims to address critical knowledge gaps in understanding how terrestrial and coastal ecosystems are responding the change, primary drivers of change, and impacts to natural resources and national priorities. This includes how irrigation practices and efficiency affects water resources and crop productivity, how coastal wetlands respond to salinity gradients and inundation patterns, and how to better predict ecosystem transitions under climate change. The successful candidate will develop novel integration frameworks and model improvements that leverage the complementary strengths of observations and simulations to provide actionable insights for sustainable land and water management in terrestrial, agricultural and coastal systems.

This research project has three interrelated areas of focus around the general theme of improving Biospheric modeling to address critical science and applications:

1.Developing innovative new methods to integrate remote sensing, custom products and other observations with process models leveraging data assimilation, AI/ML, emulators, and other tools.

2.Investigating parameterizations and representation of underlying ecosystem processes to improve the modeling of carbon, water and energy fluxes and pools, including developing new scale-aware or flexible parameterizations that can capture vegetation plasticity across ecosystem gradients

3.Deploying existing tools, best practices, and new methods to improve model benchmarking, uncertainty quantification, value of information analyses and delivery of modeling results to guide critical applications and drive innovation and prioritization in Earth Observation technologies

Field of Science: Earth Science

Advisors:

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Questions about this opportunity? Please email npp@orau.org

Qualifications This position is open candidates with a wide variety of backgrounds and skillsets, including (but not necessarily limited to) any combination of the following:

- Plant biology and physiological ecology

- Terrestrial ecology, including ecosystem ecology, community ecology, theoretical ecology, biodiversity, and biogeography

- Dynamic modeling and model-data fusion, especially in the context of dynamic vegetation modeling, land surface modeling, and Earth System modeling

- Statistics and data science (especially, multivariate statistics, Bayesian statistics)

- Remote sensing theory (e.g., radiative transfer physics; algorithm development)

- Remote sensing measurements and instrumentation, including calibration and validation, experience using remote sensing technologies (including UAVs) in the field, etc.

- Remote sensing applications, including image analysis and Geographic Information Systems (GIS)

- Computer science and informatics, including HPC, cloud computing, and data architecture

Point of Contact Mikeala

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree.